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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

BOYD, JENNIFER A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1771

11

DATE MAILED: 02/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,153

Examiner

Jennifer A Boyd

FILE
Applicant(s)

MARZOLIN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/11/00.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The Applicant's Amendments to the Specification and claims 1 – 18, the newly added claims 19 – 20 and the Accompanying Remarks, filed December 12, 2002, have been entered as Paper No. 7 and have been carefully considered. The Examiner withdraws the 35 U.S.C. 112, first paragraph rejections to the Specification as set forth in paragraphs 1 and 2 of Paper No. 6. The Examiner withdraws the claim objections of claims 1 and 16 as set forth in paragraph 3 of Paper No. 6. The Examiner withdraws the 35 U.S.C. 112, second paragraph rejections of claims 1 – 18 as set forth in paragraphs 6 – 31 of Paper No. 6. The Examiner withdraws the 35 U.S.C. 101 rejection of claim 18 as set forth in paragraph 32 of Paper No. 6. The Examiner withdraws the 35 U.S.C. 102 rejections of claims 1 – 18 as set forth in paragraphs 34 – 49 of Paper No. 6. Despite these advances and after a new search, the invention is not found to be patentable for the reasons herein below.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

2. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 is not further limiting. The claim states that the adhesion

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promoter can be organic or inorganic or organic/inorganic hybrid. It is unclear what type of material would **not** meet that limitation.

Claim Rejections - 35 USC § 112

3. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 15 states that the photocatalytic material is deposited during a conversion operation of the fibrous material into mats. It is unclear how the photocatalytic material can be deposited at the same time as the conversion operation. The Examiner will interpret that the material is deposited in sequence with the conversion operation of the fibrous material into mats.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arakawa Tamio et al. (JP 08-252305).

As to claims 1 and 10, Arakawa teaches an air purifying sheet comprising a photocatalytic semi-conducting material, such as titanium oxide, adhered to a glass fiber fabric (Abstract). The second embodiment of Arakawa's invention involves applying an aqueous

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solution containing the photocatalyst particles and polytetrafluoroethylene particles, which can act at the Applicant's "adhesion promoter", to a glass fiber fabric (Description of Prior Art, page 1, [0006]).

As to claim 1, Arakawa discloses the claimed invention except for that the photocatalytic coating material coats fibers in the portion of the fibrous material over a thickness of between 30 and 50nm. It should be noted that the amount of photocatalytic coating used over the thickness of the fibrous material is a result effective variable; as the thickness of the photocatalytic coating increases, the material has better filtering, odor-controlling or bacteria-fighting functions. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the photocatalytic coating material coat the fibers in the portion of the fibrous material over a thickness of between 30 and 50nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of photocatalytic coating used on the fibrous material to create superior filters and odor-controlling or bacteria-fighting materials.

7. Claims 1 - 9 and 11 - 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murasawa (US 5,547,823).

8. As to claim 1, Murasawa teaches that a fibrous material (such as a wood or paper sheet) (column 4, line 60) has particles of a photocatalyst such as titanium oxide adhered thereon via a less degradative adhesive such as a fluorinated polymer, which acts as the Applicant's "adhesion promoter" (Abstract).

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9. As to claims 1 and 12, Murasawa discloses the claimed invention except for that the photocatalytic coating material coats fibers in the portion of the fibrous material over a thickness of between 30 and 50nm as required by claim 1 or at least 50nm as required by claim 12. It should be noted that the amount of photocatalytic coating used over the thickness of the fibrous material is a result effective variable; as the thickness of the photocatalytic coating increases, the material has better filtering, odor-controlling or bacteria-fighting functions. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the photocatalytic coating material coat the fibers in the portion of the fibrous material over a thickness of between 30 and 50nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of photocatalytic coating used on the fibrous material to create superior filters and odor-controlling or bacteria-fighting materials.
10. As to claims 2 and 19, the titanium oxide is dispersed into a solvent in order to coat the substrate (column 5, lines 23 – 27), which is in any crystal form including anatase (claim 4) which in order to spray coat would have in a suspended form.
11. As to claim 3, the source of the titanium oxide is irrelevant to the claimed product, therefore, the claim is not patentably limiting.
12. As to claim 4, the adhesion promoter can be organic or inorganic (column 3, lines 19 – 26) and it can be multi-component (column 3, lines 26 – 28).
13. As to claim 5, the adhesion promoter can contain silicone based polymer (column 3, lines 52 – 55).

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14. As to claim 6, the adhesion promoter can contain a fluorinated polymer (column 3, lines 38 – 52).

15. As to claim 7, the titanium oxide used as the photocatalyst also is used as a part of the adhesion promoter (Abstract).

16. As to claim 8, the adhesion promoter can contain aluminum phosphate (column 3, line 23).

17. As to claim 9, the adhesion promoter is one element in the adhesive composition (binder) (column 3, lines 26 – 28).

18. As to claim 11, the fibrous material can be in paper form (column 4, line 61).

19. As to claim 13, the features of the patent are discussed above.

20. As to claims 14, 15 and 16, the coating composition is applied to the fibrous material such as a mat (column 5, lines 54 – 68), therefore is applied downstream from the fiberizing devices. After the coating or spraying, the composition is fixed by a technique of drying, irradiating with ultra-violet rays, heating cooling or using a crosslinking agent (column 6, lines 5 – 16) which would constitute the heat treatment/conditioning devices.

21. As to claim 17, the coating of the composition is done using any ordinary coating technique in the liquid phase, which is implied by spraying or immersing (column 5, lines 54 – 60).

22. As to claim 18, the fibrous material is an air purifying sheet (Abstract).

23. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murasawa (US 5,547,823) in view of Oosawa (JP 08-269391).

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Murasawa fails to disclose the use of an antioxidant, an ultraviolet absorber or a hindered amine light stabilizer.

Oshawa teaches a coating composition comprising an organic metallic complex, a triazine-based or oxalic acid anilide-based ultraviolet absorber and a hindered amine light stabilizer as an antioxidant (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the ultraviolet absorbing and antioxidant composition of Ohsawa in the fibrous material of Murasawa in order to have a material with excellent stability and weatherability without discoloration.

Response to Arguments

24. Applicant's arguments filed December 12, 2002 have been fully considered but they are not persuasive.

As to the Applicant's argument that Arakawa (JP 08-252305) does not teach the limitations of amended claims 1 and 13, the Examiner respectfully argues the contrary. Arakawa teaches an air purifying sheet comprising a photocatalytic semi-conducting material, such as titanium oxide, adhered to a glass fiber fabric (Abstract). The second embodiment of Arakawa's invention involves applying an aqueous solution containing the photocatalyst particles and polytetrafluoroethylene particles, which can act at the Applicant's "adhesion promoter", to a glass fiber fabric (Description of Prior Art, page 1, [0006]). Although Arakawa does not specifically teach that the aqueous dispersion of photocatalyst and PTEF particles can be coated over at least a portion of the fibrous material over a thickness of between 30 and 50 nm, it would

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have been obvious to optimize the coating thickness in order to maximize the fibrous material's filtering, odor-controlling or bacteria-fighting abilities. According to the Applicant's amended claim 17, the depositing means of the dispersion comprises one of spraying, coating or dip coating which is also taught by Arakawa (page 2, [0012]). Because both the Applicant and Arakawa use the same means to apply the dispersion to the fibrous material, it would be reasonable to assume that Arakawa could also adjust the level of coating thickness when applying the dispersion.

As to the Applicant's argument that Murasawa does not teach limitations of amended claims 1 and 13, the Examiner respectfully argues the contrary. Murasawa teaches that a fibrous material (such as a wood or paper sheet) (column 4, line 60) has particles of a photocatalyst such as titanium oxide adhered thereon via a less degradative adhesive such as a fluorinated polymer, which acts as the Applicant's "adhesion promoter" (Abstract). Although Murasawa does not specifically teach that the aqueous dispersion of photocatalyst and PTEF particles can be coated over at least a portion of the fibrous material over a thickness of between 30 and 50 nm, it would have been obvious to optimize the coating thickness in order to maximize the fibrous material's filtering, odor-controlling or bacteria-fighting abilities. Like the Applicant's invention, Murasawa teaches that the coating composition can be applied by dip coating, roller coating and spray coating among other methods (column 5, lines 53 – 60), therefore, it would be reasonable to assume that Murasawa could also adjust the level of coating thickness when applying the coating.

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Jennifer Boyd
February 6, 2003